Medication Error and Adverse Drug Event Reporting System

MEADERS

AHRQ PBRN Resource Center

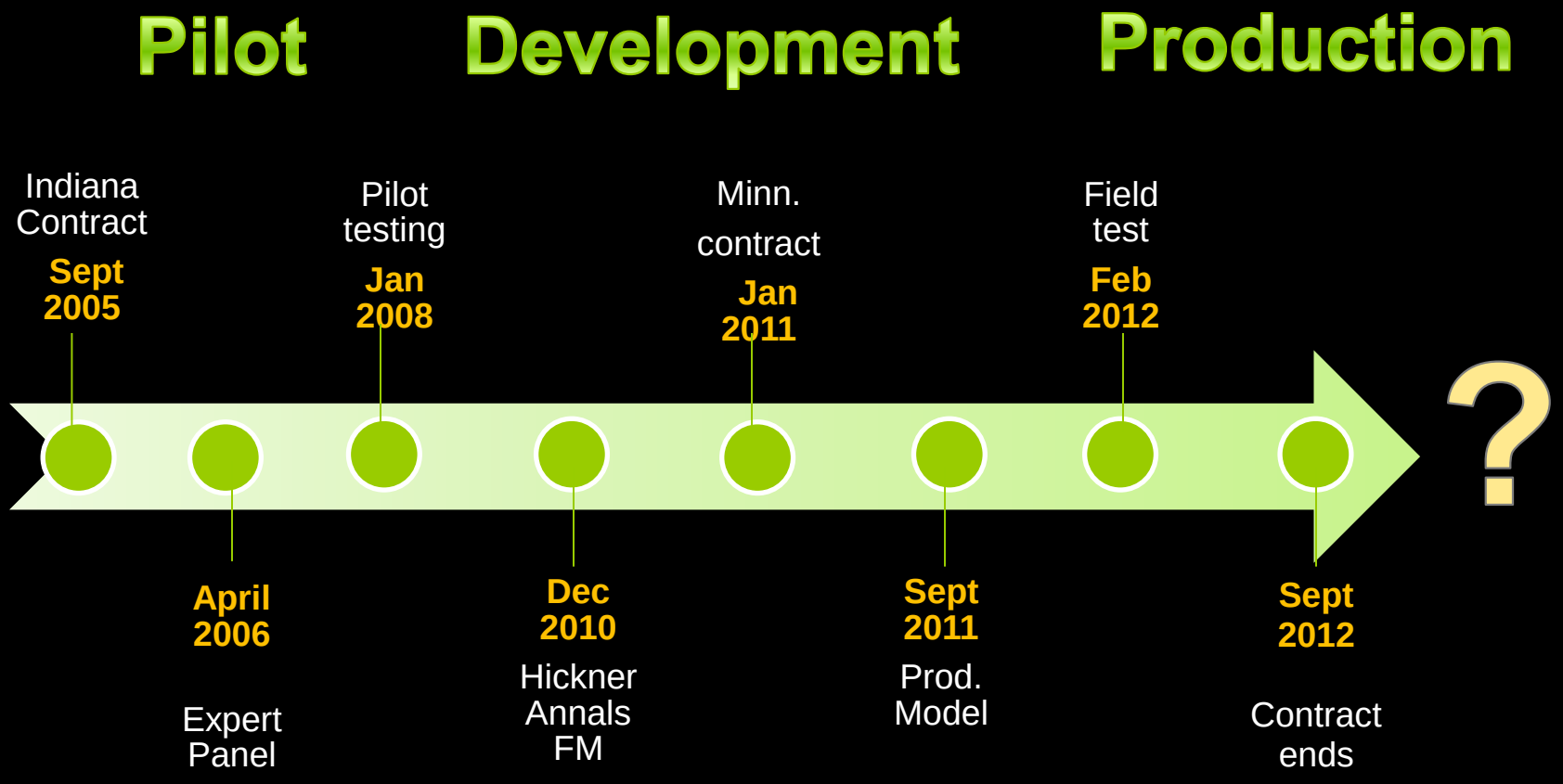
Errors in Ambulatory Care

The potential risk due to medication errors and adverse drug events from office prescribing is many times greater than that from hospital prescribing. [1]

- No routine event reporting system for ambulatory care
- Inability to capture events that do not cause harm (near misses)
- Absent benchmarks for quality improvement

1 Hickner et. al. Field Test Results of a New Ambulatory Care Medication Error and Adverse Drug Event Reporting 2010System—MEADERS Ann Fam Med ;8:517-525.

MEADERS Timeline



Overall functions

- Records new adverse events and errors
- Easily accessible
- Categorizes errors by type and contributing factors
- Compares practice rates to benchmarks
- Simplifies MedWatch reporting
- Secure, locally administered, rapidly deployable

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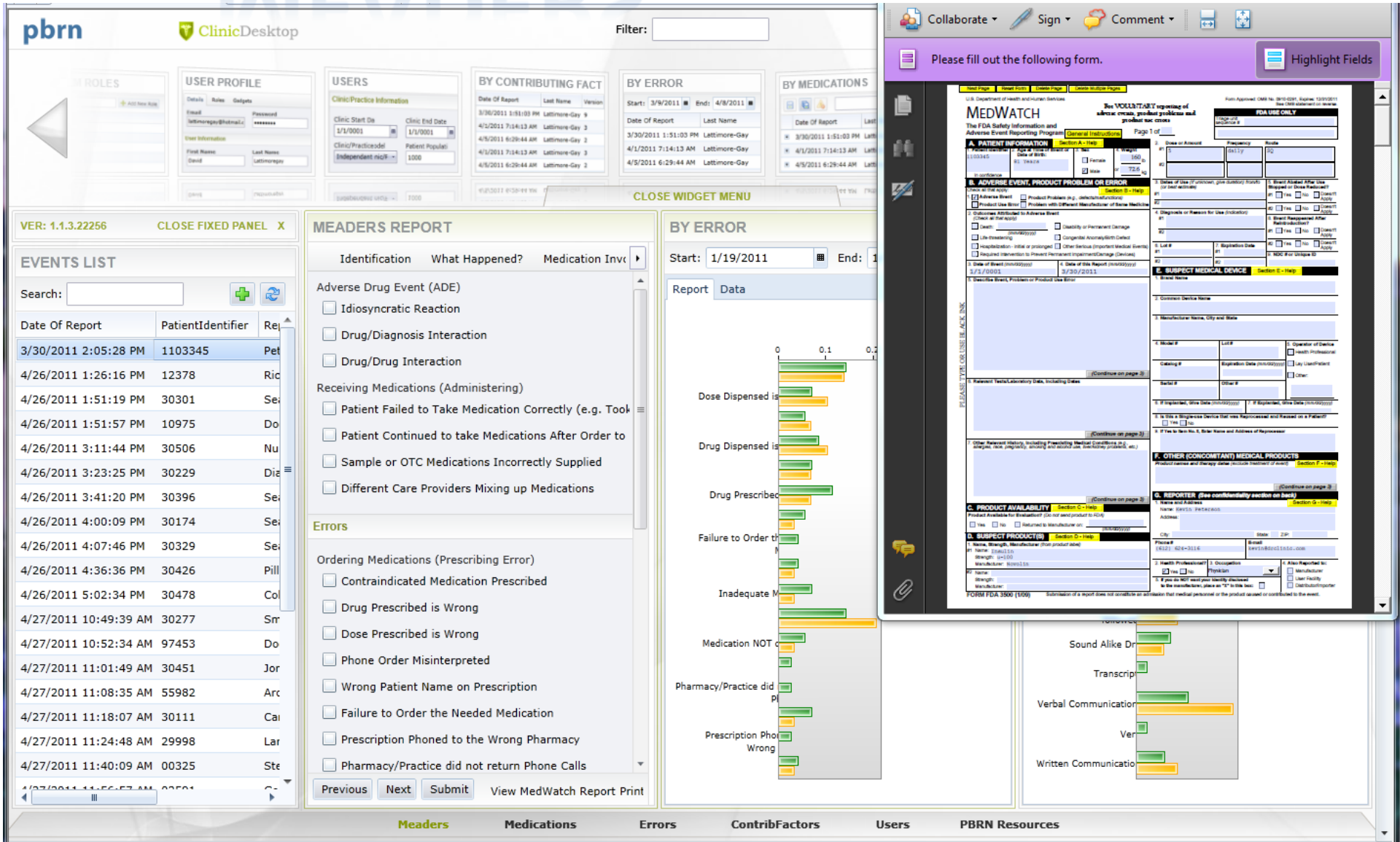
Medication Error and Adverse Event Reporting System



Scenario

- 42 yo BF fell on the ice
- Sustained injury to left chest
- Physical exam
  - Lungs clear, CV exam normal
  - Pain localizes at 8th rib. No step off.
  - Prescription for Vicodin 10 mg
  - During the visit the nurse came in and said that a lab requisition on another patient hadn't printed in the lab and needed to be sent again
  - Patient was given prescription and released

Scenario

- Nurse returns with the prescription
- The wrong patients name is printed on it
- Prescription reprinted with the correct name
- Currently the process stops
  - Differing opinions exist about what happened
    - Nurse blames doctor
    - Doctor blames nurse
    - Patient concerned about future errors

Scenario

- Live demonstration
  - Based on an actual case
  - Data entry for Scenario
    - Record new event
    - Compare rates to all practices
    - Pages configure to optimize time

Scenario

- Quality Improvement reviews existing errors
  - Benchmarks reviewed
  - Different versions of event are considered
  - Contributing causes examined
- Root causes determined – wrong patient
  - Patient name was being blocked by a drop down box on the prescription page (remote desktop)
  - Patients name was not visible when prescribing
- Solution
  - Hide the drop down box (show patient name when prescribing)
  - Additional process changes

Initial Report

- Four PBRNs
- 507 errors
- 24 practices
- Identified the most common errors in ambulatory primary care
- Categorized contributing factors to errors

Hickner et. al, Ann Fam Med 2010;8:517-525.

From prototype to production

- 2011 AHRQ sponsored development
  - Enhance scalability
  - Enhance security
  - Support multiple operating systems
  - Implement new authentication scheme
  - Simplify access

Scaling to a larger audience

- MySQL database
- C# Framework
- Replace proprietary drug interface
- Runs within an internet browser
  - Microsoft Silverlight plug-in
  - Open source Moonlight plug-in

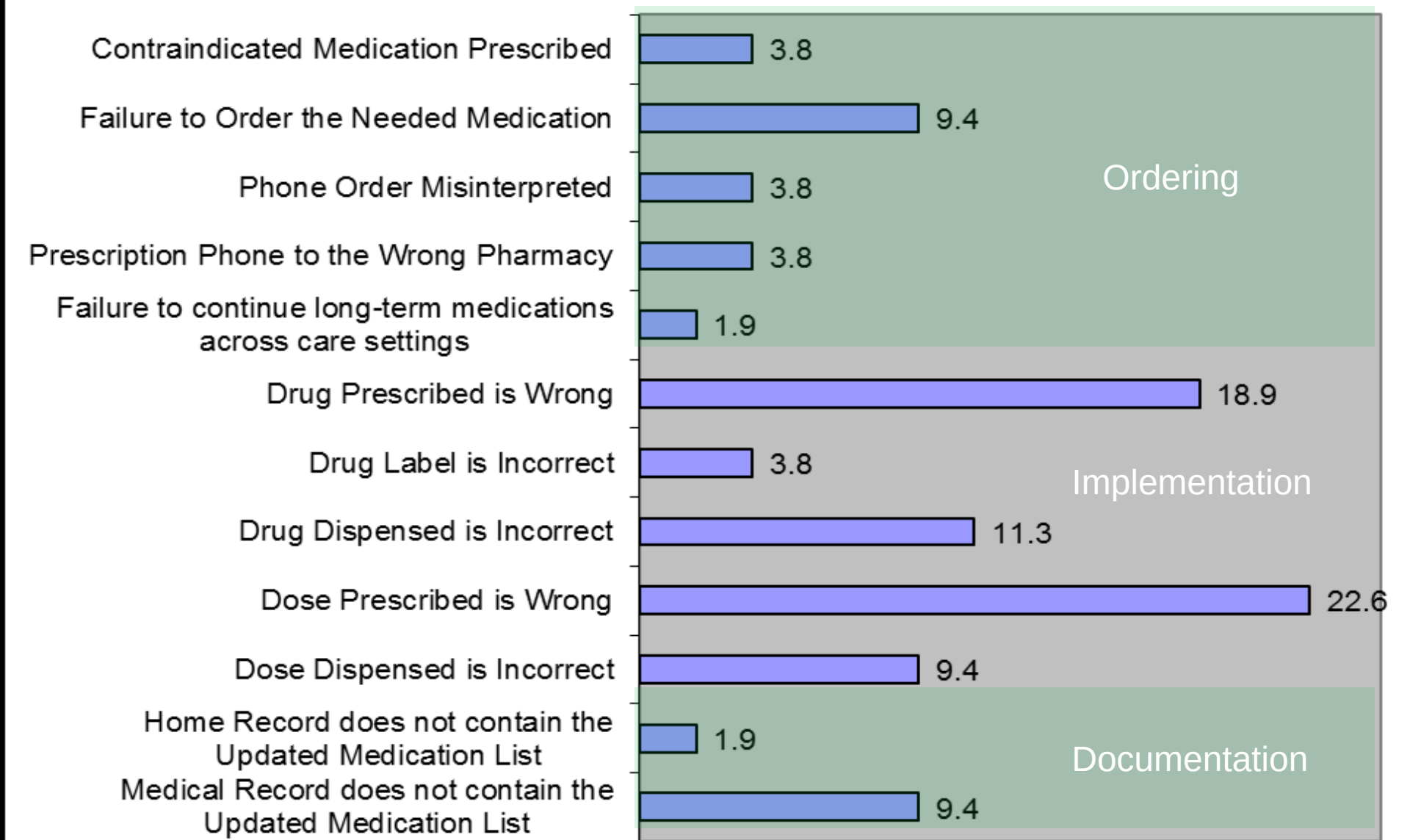
Results of Alpha testing

- Cleveland Clinic
  - Principal Investigator John Hickner
- Four practices
  - Primary Care
  - One month intervention
- Initial training
  - 30 minute demonstration
  - Handouts
  - Hands on practice.
- Secure storage of information

Testing the software

- 27 people reporting errors
- 81 reports
  - 51% Medication errors
  - 13% Adverse drug reactions
  - 13% Patient errors
- 73 different drugs involved
- 12 different types of error reported
- 12 contributing factors identified
- Harm done?
  - 61% No harm done
  - 38% Potential for harm
  - 1% Life threatening harm

Types of Errors



Contributing factors

Written Communication Problem	12%
Computer Error or Malfunction	7%
Calculation Error	6%
Transcription Error	6%
Abbreviation is Misunderstood	4%
Verbal Communication Problem	4%
Fax Problem	2%
Office Procedure or Protocol not followed correctly	2%
Handwriting is Illegible or Unclear	1%
Look Alike Drug Names	1%
Sound Alike Drug Names	1%
Verbal Order	1%

Software Feedback

- RedCap survey of participating clinic staff
- MD, DO, RN, LPN, MA, Lab Tech
- Usability (agree/strongly agree)
  - Little or no difficulty using the system 67%
  - “Easy to use” 50%
  - Does not take too much time 67%
  - Candid reporting 83%
  - Increases awareness of how errors occur 44%
  - Improves patient care 39%
  - No concerns about privacy 78%

System improvement

- How to increase use
  - More opportunity to access 62%
  - Greater awareness of benefits 38%
  - More assurance of confidentiality 33%
- Comments
  - Decrease the time it takes to report an event
  - Better integration with EHR
  - Single sign on

Other Agency Interest

- HRSA
  - Implementation in FQHCs
  - Testing underway in Tucson
  - Modification for pharmacy reporting
- FDA
  - Interest in accepting electronic reports
  - Enhancing data quality of MedWatch voluntary reporting

MEADERS

- Advantages of MEADERS reports to FDA MedWatch Program
  - Authenticated users
  - Medical professionals
  - Captures events that caused no harm
  - Events are verifiable

Dissemination

- Spring 2012
  - MEADERS available to all registered PBRNs
  - FQHCs and other health systems
- Available on line for 4-6 months
- Available as a download after that time for local installation